Better Buildings®
U.S. DEPARTMENT OF ENERGY

Residential Energy Modeling for the Public Sector

Thursday, July 11, 2019
2:00 PM – 3:30 PM

U.S. DEPARTMENT OF ENERGY

Speakers

- **Eric Wilson**, National Renewable Energy Lab (NREL)
- **Deborah Philbrick**, Elevate Energy
- Moderator: Madeline Salzman, DOE

Residential Building Energy Modeling for Public Sector Partners

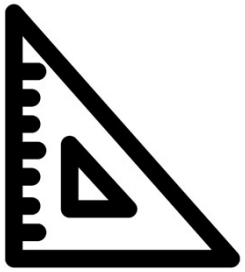
Madeline Salzman

US Department of Energy Building Technologies Office

Why Focus Public Efforts on Residential Efficiency?

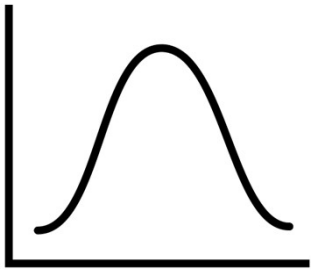
95%

of U.S. buildings



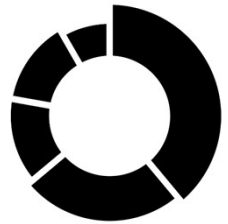
70%

of U.S. building stock square footage



50%

of peak demand on electricity grids



21%

of U.S. energy use

Efficiency Makes Homes Better Places to Live

Helps Reduce Costs.
Energy burdens average higher than both property taxes and home insurance.

Smart Investment.
Efficiency features payback via energy savings over time.

Improves Quality of Life

Reduce environmental impact.

Increased comfort.

Improved health outcomes.

Less draftiness.

Peace of mind.

Increased control.

Problems Residents Face to Accessing Efficiency

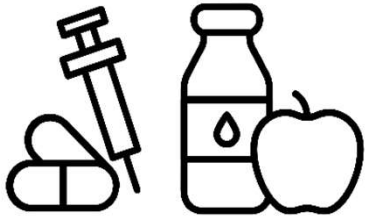
Residents are not well informed on which upgrades are best-fit for their home or associated benefits

Efficiency is persistently undervalued in residential real estate

Most consumers lack access to capital for efficiency upgrades

Yet, Energy Burdens Are High

Nearly **one-third** of U.S. households reported facing a challenge in paying energy bills or sustaining adequate heating and cooling in their homes in 2015.



About **one in five** households reported reducing or foregoing necessities such as food and medicine to pay an energy bill.

The **most common reason** reported for individuals seeking payday loan products is to pay their utility bills.

Sources: EIA 2015 & FDIC 2012

A Resource to Help

Residential Energy Efficiency for Local Governments

» Easy to find under “Communities” Tab of Better Buildings Website

U.S. DEPARTMENT OF ENERGY

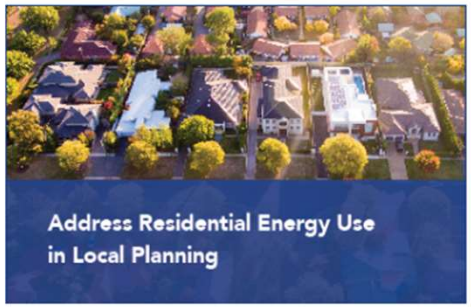
Residential Energy Efficiency for Local Governments

- Click on “Communities” Tab of Better Buildings Website
- Click on resource name to far right of drop-down menu

- Home page: https://betterbuildingsinitiative.energy.gov/bca/residential-energy-efficiency-resources-local-governments

U.S. DEPARTMENT OF ENERGY

Six Primary Strategies Highlighted


Address Residential Energy Use in Local Planning


Adopt Residential Building Energy Codes and Standards

Start a Home Energy Labeling Program


Enable Financing for Residential Efficiency Upgrades


Offer Incentives to Make Efficiency More Affordable


Upgrade the Efficiency of Affordable Housing in Your Community

Each strategy includes dozens of resources:

- Introduction
- Stakeholders & potential collaborators
- U.S. DOE tools & resources
- Other helpful resources
- Examples from local governments where strategies are in action

Links to Other Resources on Residential Efficiency

Additional Resources:

- DOE's Better Buildings Residential Network: Connects energy efficiency programs and partners to share best practices and learn from one another to increase the number of homes that are energy efficient. Local governments can learn from the experiences of their peers through peer exchange calls and other forums for sharing information on topics of interest. Contact: bbresidentialnetwork@ee.doe.gov
- DOE's Residential Program Solution Center: A repository for lessons learned, resources, and knowledge from program administrators and industry experts across the country. Find information to help plan, operate, and evaluate residential energy efficiency programs.

Example with Strategy 3: Home Energy Labeling

Address Residential Energy Use in Local Planning

Adopt Residential Building Energy Codes and Standards

Start a Home Energy Labeling Program

Enable Financing for Residential Efficiency Upgrades

Offer Incentives to Make Efficiency More Affordable

Upgrade the Efficiency of Affordable Housing in Your Community

Home Energy Labeling: Introduction

Better Buildings® U.S. DEPARTMENT OF ENERGY

PROGRAMS | Contact Us

ALL ▼ | SEARCH SOLUTIONS

SOLUTIONS | PROGRAMS & PARTNERS | SUMMIT & SWAP | LEARN MORE

ACCELERATORS | ALLIANCE | BETTER PLANTS | CHALLENGE | CHP | COMMUNITIES | HOME ENERGY SCORE | ISO 50001 | WORKFORCE

START A HOME ENERGY LABELING PROGRAM

Home energy labeling programs and policies allow local governments to provide reliable, standardized information to residents about homes' estimated energy use. In addition to energy use estimates, home energy labels can provide an estimate of a home's energy costs, as well as recommendations for energy-saving improvements that can make the home more comfortable and less expensive to run. This information helps homeowners, buyers, sellers, and renters make informed decisions about home purchases, rentals, or upgrades they can make. Local governments can use home energy labels to promote transparency of energy information in the real estate market, requiring a label to be provided in real estate listings, at time of sale/rental, or when upgrades are made. Additionally, the home energy information that is typically collected in order to generate a home energy label can provide local governments with a better understanding of the conditions of local housing stock, helping to target resources where most needed. << Back to Main Page

Stakeholders & Potential Collaborators

- Local government sustainability or energy office
- Energy action team
- Utility residential energy efficiency programs
- Real estate professionals
- Home inspectors
- Lenders/banks
- Local Multiple Listing Service (MLS)

Home Energy Labeling: Stakeholders

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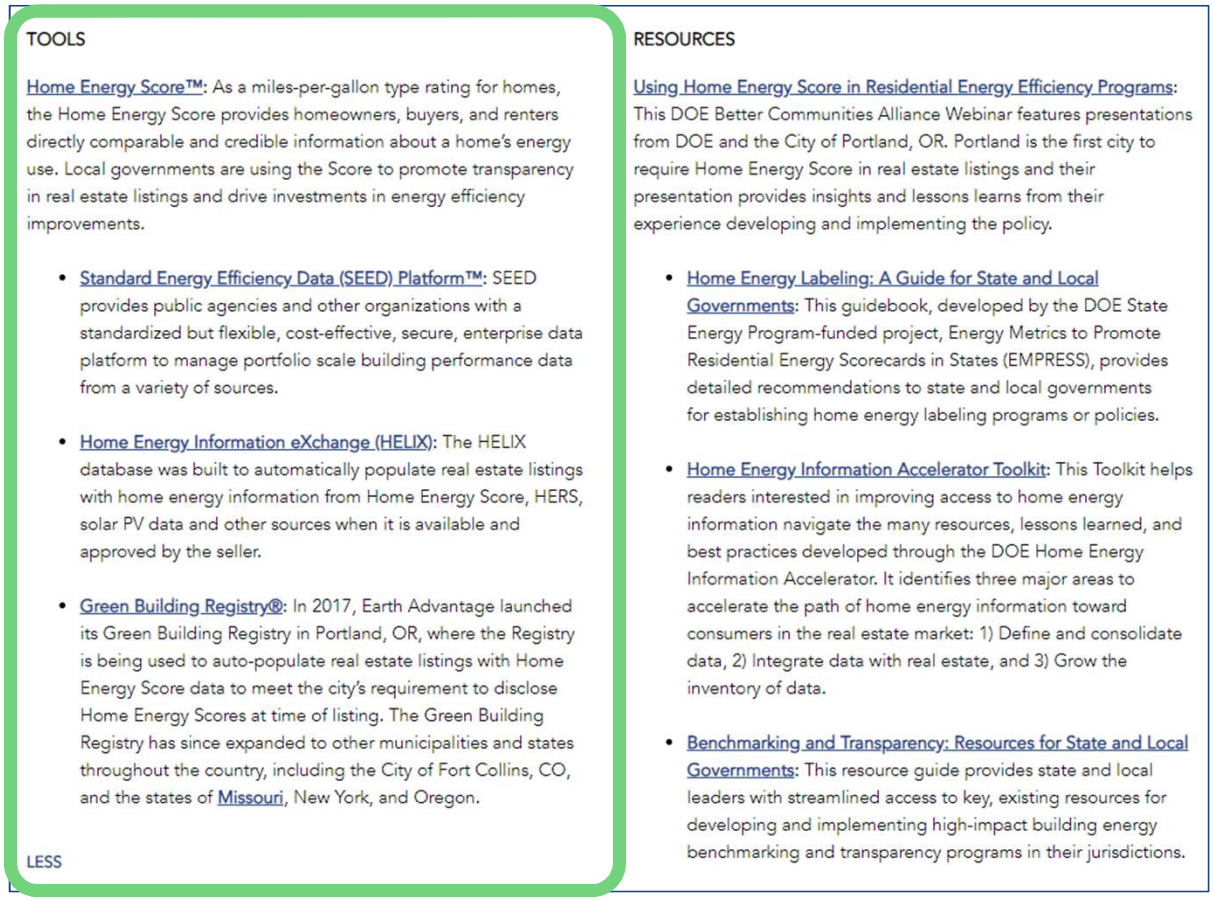
Home Energy Labeling: U.S. DOE Tools



TOOLS

Home Energy Score™: As a miles-per-gallon type rating for homes, the Home Energy Score provides homeowners, buyers, and renters directly comparable and credible information about a home's energy use. Local governments are using the Score to promote transparency in real estate listings and drive investments in energy efficiency improvements.

- Standard Energy Efficiency Data (SEED) Platform™: SEED provides public agencies and other organizations with a standardized but flexible, cost-effective, secure, enterprise data platform to manage portfolio scale building performance data from a variety of sources.
- Home Energy Information eXchange (HELIX): The HELIX database was built to automatically populate real estate listings with home energy information from Home Energy Score, HERS, solar PV data and other sources when it is available and approved by the seller.
- Green Building Registry®: In 2017, Earth Advantage launched its Green Building Registry in Portland, OR, where the Registry is being used to auto-populate real estate listings with Home Energy Score data to meet the city's requirement to disclose Home Energy Scores at time of listing. The Green Building Registry has since expanded to other municipalities and states throughout the country, including the City of Fort Collins, CO, and the states of Missouri, New York, and Oregon.

LESS

RESOURCES

Using Home Energy Score in Residential Energy Efficiency Programs: This DOE Better Communities Alliance Webinar features presentations from DOE and the City of Portland, OR. Portland is the first city to require Home Energy Score in real estate listings and their presentation provides insights and lessons learns from their experience developing and implementing the policy.

- Home Energy Labeling: A Guide for State and Local Governments: This guidebook, developed by the DOE State Energy Program-funded project, Energy Metrics to Promote Residential Energy Scorecards in States (EMPRESS), provides detailed recommendations to state and local governments for establishing home energy labeling programs or policies.
- Home Energy Information Accelerator Toolkit: This Toolkit helps readers interested in improving access to home energy information navigate the many resources, lessons learned, and best practices developed through the DOE Home Energy Information Accelerator. It identifies three major areas to accelerate the path of home energy information toward consumers in the real estate market: 1) Define and consolidate data, 2) Integrate data with real estate, and 3) Grow the inventory of data.
- Benchmarking and Transparency: Resources for State and Local Governments: This resource guide provides state and local leaders with streamlined access to key, existing resources for developing and implementing high-impact building energy benchmarking and transparency programs in their jurisdictions.

List of Tools

» U.S. DOE software, plug-and-play programs, and data management systems that enable public sector programs to begin without reinventing the wheel

Home Energy Labeling: U.S. DOE Resources

TOOLS

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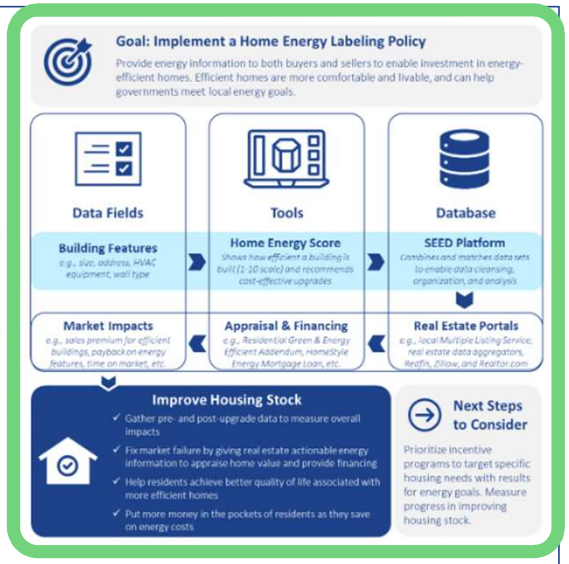
List of Resources

» U.S. DOE toolkits, published guides, and written resources that help communities walk through the steps of implementing this strategy

Home Energy Labeling: Other Helpful Resources

LOCAL GOVERNMENT EXAMPLES

- **Berkeley, California:**
  Berkeley's Building Energy Saving Ordinance (BESO) requires building owners and homeowners to complete and publicly report comprehensive energy assessments to uncover energy saving opportunities. Single family homes are required to get a Home Energy Score prior to sale, but may be deferred to the buyer for up to 12 months at time of sale. Home Energy Score data from the first year of implementation showed that the majority of homes scored were poorly insulated, and very few had insulation up to code. The city also found that the majority of homes scored had single paned windows. The three most common recommendations included in Berkeley Home Energy Score reports to date have been floor insulation, attic insulation and air sealing, and installing a central gas furnace. The city's home energy disclosure policy not only provides consumer protections and critical information to residents about home energy use and costs, but is also helping the city identify where the greatest energy efficiency needs are in its housing stock.



- **Columbia, MO:**
  The City of Columbia, MO's municipal utility, Columbia Water & Light, offers the Home Energy Score at no cost to customers in its Home Performance with ENERGY STAR program and provides the Score both before and after energy improvements are made. Homes that achieve a Home Energy Score of 8 or higher (on a 10-point scale with 10 being best), a Columbia Water & Light Efficiency Score (which is based on the Home Energy Score) backed by a Home Energy Score of 8 or higher, or a HERS rating of 65 or lower are eligible to receive a Gold Certificate from the Missouri Home Energy Certification p rogram. Homes that can't reach that threshold cost effectively, but can significantly reduce their energy consumption can qualify for a Silver Certificate. The Missouri Green Building Registry™ (GBR) was designed to automatically pull home energy data through an application programming interface (API) connection which can then generate the Missouri Home Energy Certificate. The GBR pulls Home Energy Score data from Columbia Water & Light (as well as HERS and other energy efficiency data from others in the state) and offers the potential to auto-populate home energy data into real estate Multiple Listing Services.

MORE

Other Resources

» Catch-call for infographics, and other written supporting documents.

Home Energy Labeling: Local Government Examples

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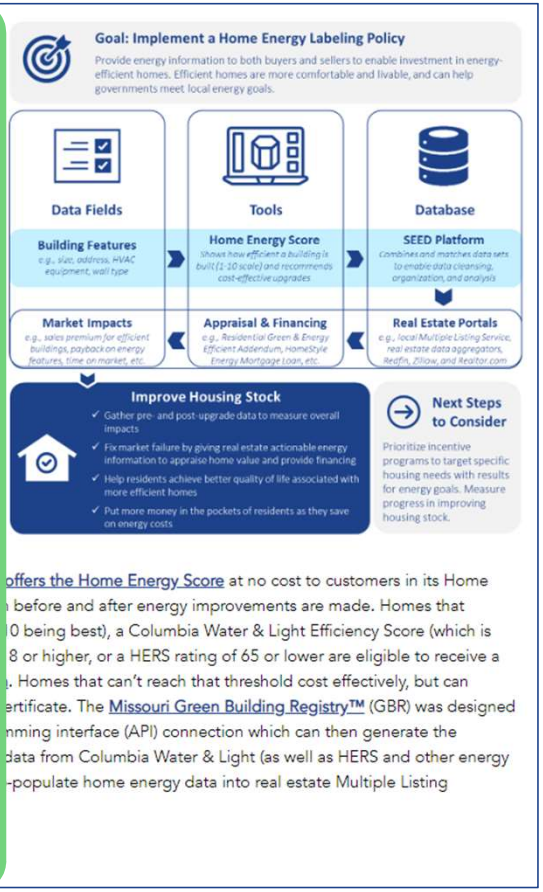


Local Government Examples

» Short descriptions of local governments having implemented this strategy already.

» Usually 3-5 local government examples per strategy

How to Use This Resource

Address Residential Energy Use in Local Planning

Adopt Residential Building Energy Codes and Standards

Start a Home Energy Labeling Program

Enable Financing for Residential Efficiency Upgrades

Offer Incentives to Make Efficiency More Affordable

Upgrade the Efficiency of Affordable Housing in Your Community

Visit Our Website!

This is Live & Living

- Visit the website today to see the first resources available
- We will continue to make updates – let us know what is missing or could be described better
- Be in touch: madeline.salzman@ee.doe.gov

- **Home page:** https://betterbuildingsinitiative.energy.gov/bca/residential-energy-efficiency-resources-local-governments

Our Next Speakers

Eric Wilson, National Renewable Energy Laboratory

» ResStock & its applications for public sector partners

Deborah Philbrick, Elevate Energy

» Use of home energy labeling in underserved markets

Followed by Discussion and Q&A

Eric Wilson

NREL

U.S. DEPARTMENT OF ENERGY

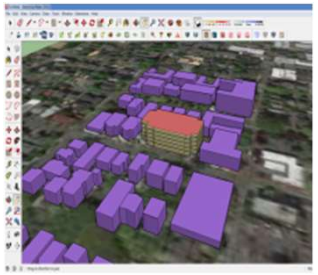
Residential energy modeling:
ResStock, URBANopt, and EnergyPlus

Eric Wilson

2019 Better Buildings, Better Plants Summit

July 11, 2019

NREL building energy modeling

Tool	Scale of application
EnergyPlus OpenStudio SDK	Individual buildings
URBANopt	 Districts, campuses
ComStock ResStock	 Building stocks (city, state, utility, national)

NREL building energy modeling

Tool

EnergyPlus

OpenStudio SDK

URBANopt

ComStock

ResStock

Districts, campuses

Building stocks
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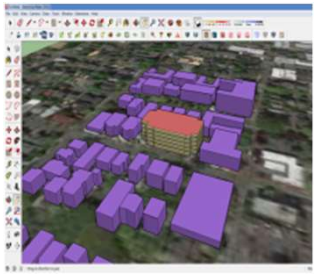
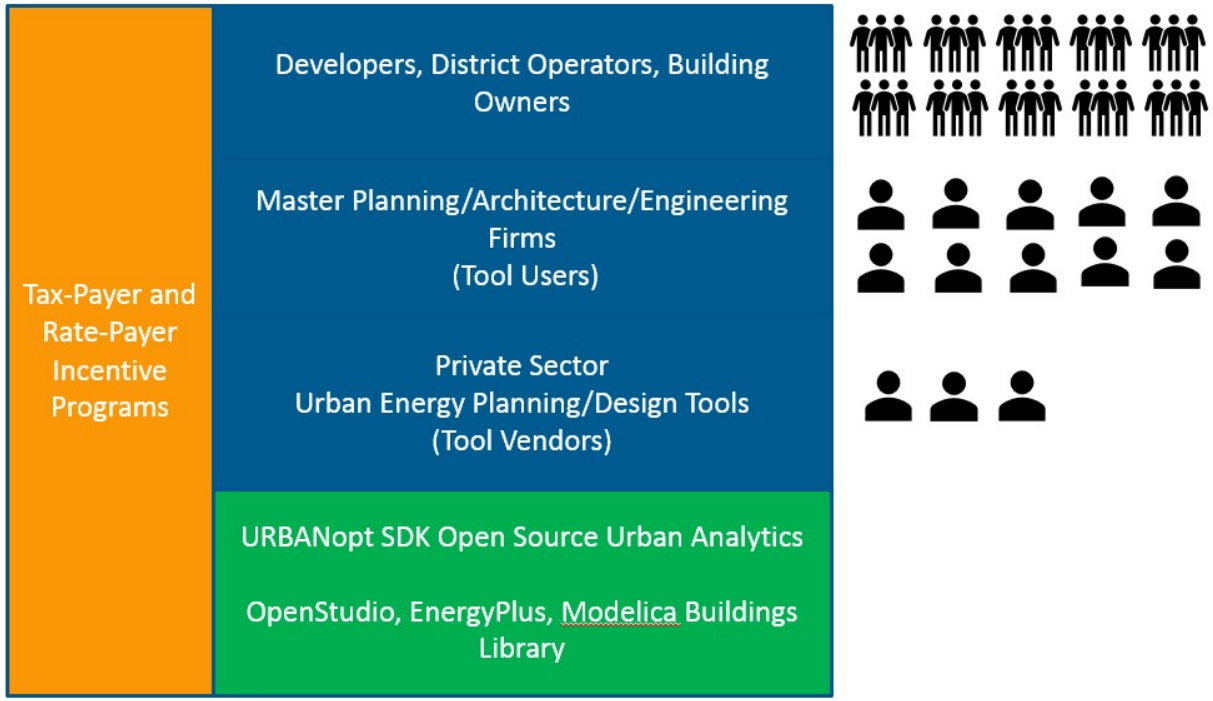
URBANopt	 Districts, campuses
ComStock ResStock	 Building stocks (city, state, utility, national)

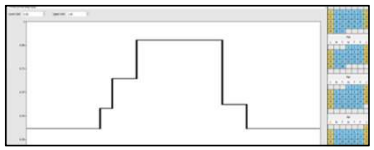
URBANopt

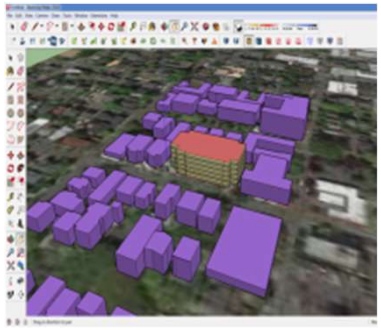
- Analytics platform for communities and urban districts
- Built on top of OpenStudio® and EnergyPlus™ through new U.S. DOE investments in tools
- Modular, open source platform; “underlying analytics” that can be integrated into private sector tools



URBANopt Analysis Workflows

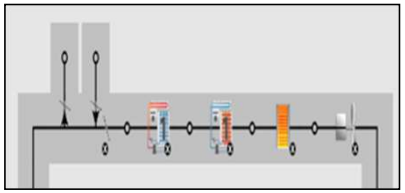
Geometry/Building Data Input and Detailed Building Energy Model Creation



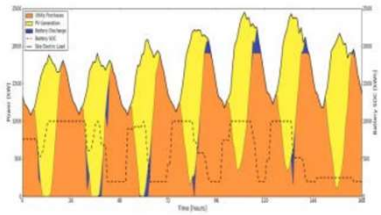


District-Scale Annual Energy Scenario Analysis

District Thermal System Analysis w/Modelica



Grid-Interactive Analysis w/ REopt/OpenDSS



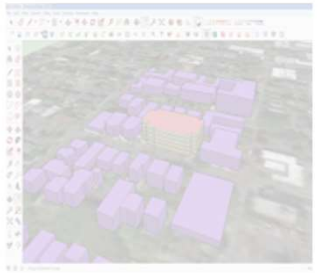
Seek Answers to these and Other Questions

What efficiency and energy generation levels are required to **achieve a Zero Energy District?**

Should **one central system or multiple smaller systems** be used and which potential thermal network layout is best?

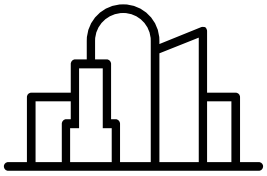
What impact does the **efficiency, demand flexibility, and distributed generation/storage** have on the electric distribution grid requirements?

NREL building energy modeling

Tool	Scale of application
EnergyPlus OpenStudio SDK	Individual buildings
URBANopt	 Districts, campuses
ComStock ResStock	 Building stocks (city, state, utility, national)

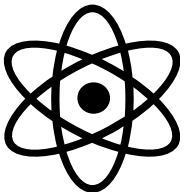

ResStock
Highly granular analysis tools
for national, regional, and local housing stocks
Natural Gas
Electricity

ResStock



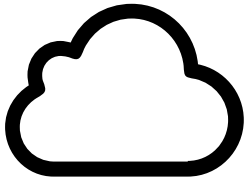
Housing stock characteristics database

+



Physics-based computer modeling

+



High-performance computing

ResStock

Housing stock characteristics database

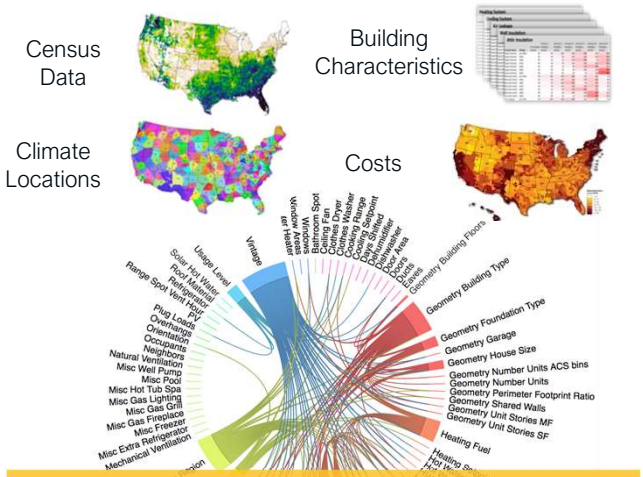
+

Physics-based computer modeling

+

High-performance computing

Large public and private datasets



6000 probability distributions for 100 parameters structured in a dependency tree

ResStock

Housing stock characteristics database

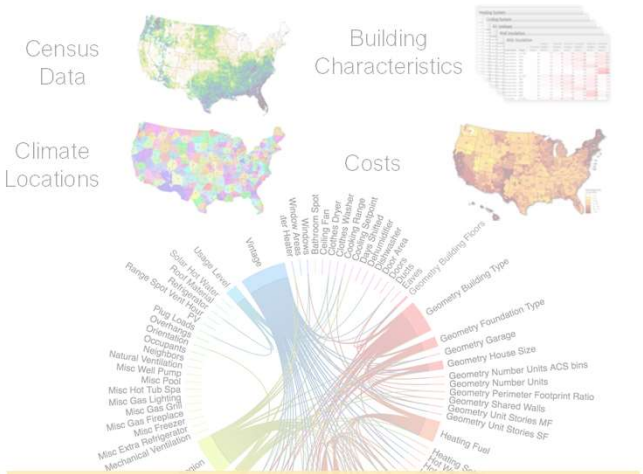
+

Physics-based computer modeling

+

High-performance computing

Large public and private datasets



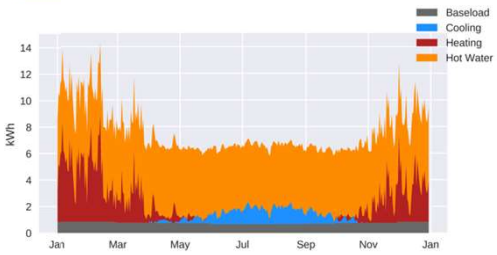
6000 probability distributions for 100 parameters structured in a dependency tree

Best-in-class models

OpenStudio

EnergyPlus

Detailed sub-hourly energy simulations



ResStock

Housing stock characteristics database

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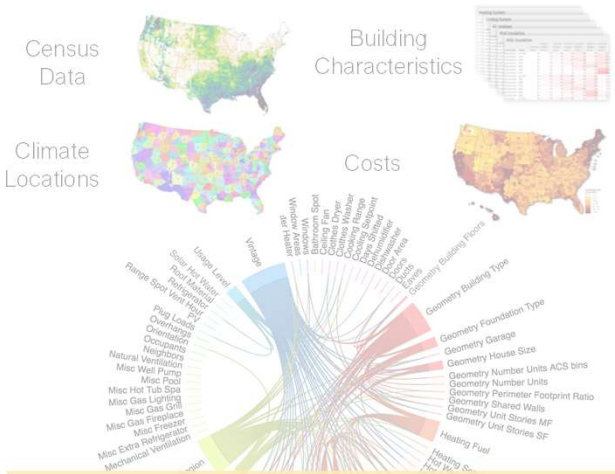

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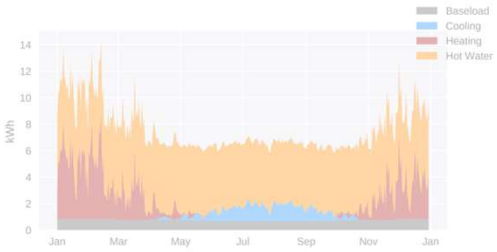


10,000s to 100,000s of simulations

NREL's supercomputer

Cloud computing

amazon web services

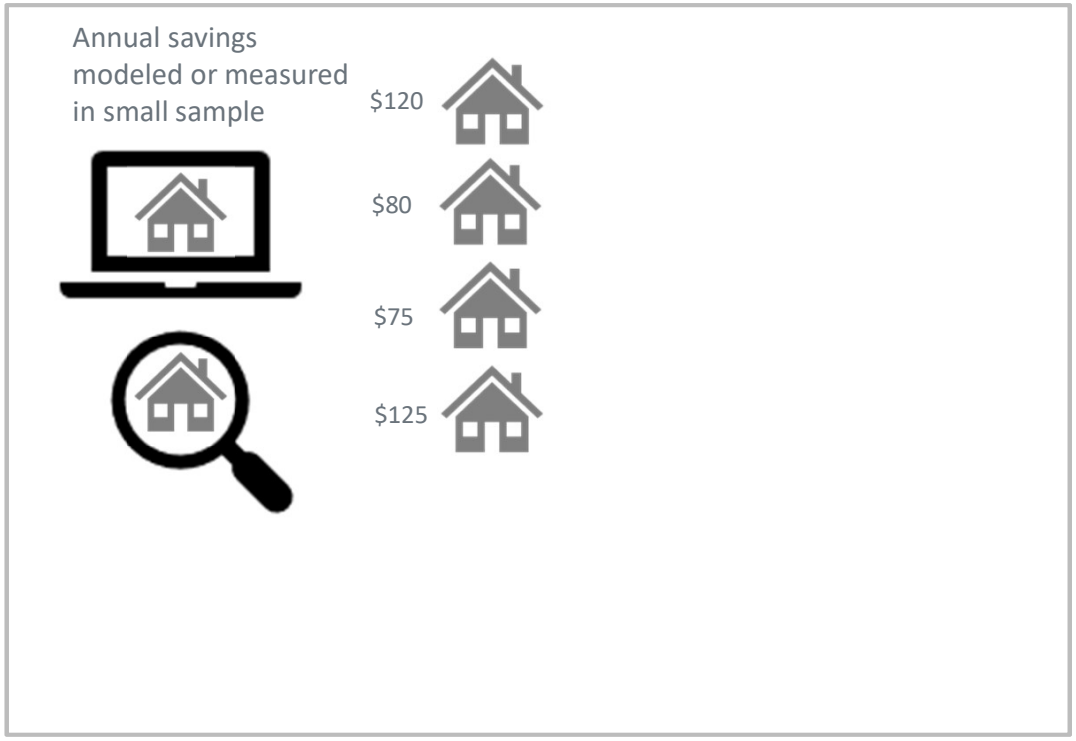
Big data technology stack

docker DASK Parquet APACHE Spark presto

Why ResStock?

Payback, in years, for wall insulation retrofit
in Washington and Oregon single-family homes

Typical Approach



Why ResStock?

Payback, in years, for wall insulation retrofit in Washington and Oregon single-family homes

= 50,000 homes

Typical Approach

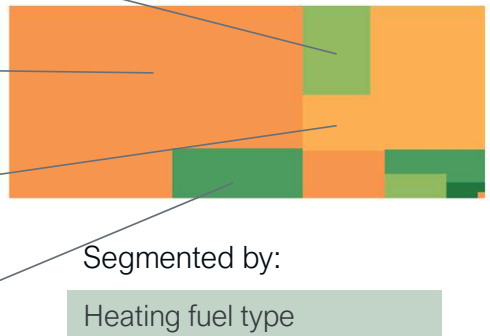
Annual savings modeled or measured in small sample

$120

$80

$75

$125



Segmented by:

Heating fuel type
Weather station

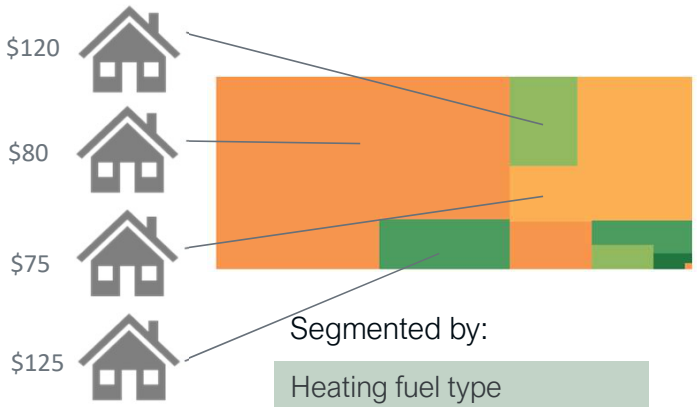
Why ResStock?

Payback, in years, for wall insulation retrofit in Washington and Oregon single-family homes

= 50,000 homes

Typical Approach

Annual savings modeled or measured in small sample

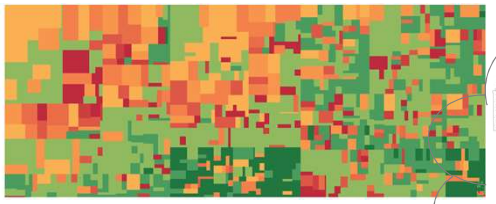


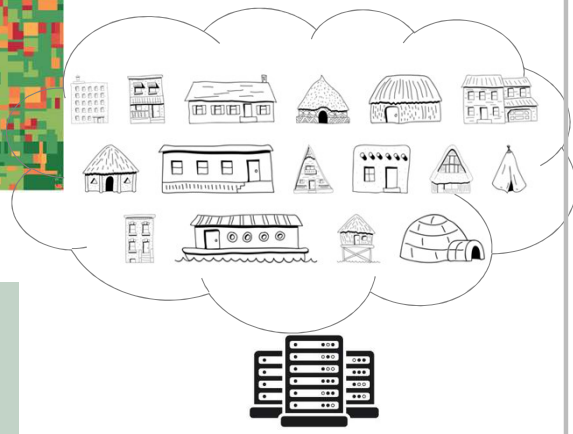
Segmented by:

- Heating fuel type
- Weather station

ResStock

Annual savings modeled with sample of 10,000s–100,000s





- Heating fuel type
- Weather station
- Year built
- Home size
- Number of stories
- Foundation type
- Occupancy
- etc.

House icons by HAWRAF via autodraw.com

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House icon by UNiCORN from Noun Project (creative commons)

ResStock

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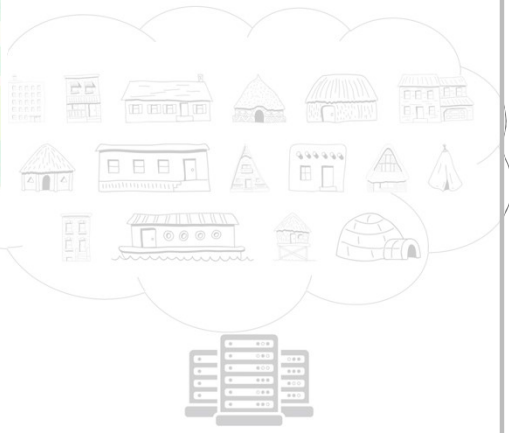
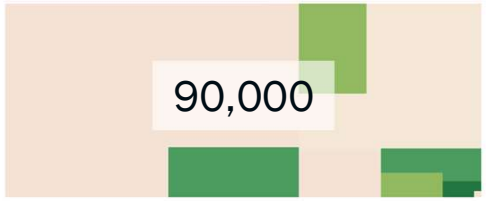


House icons by HAWRAF via autodraw.com

Homes with less than 5-year payback



Segmented by:

- Heating fuel type
- Weather station

- Heating fuel type
- Weather station
- Year built
- Home size
- Number of stories
- Foundation type
- Occupancy
- etc.

Applications

Utility companies and consultants

- **Increase the cost-effectiveness** of programs ($8B/yr)
- **Defer distribution infrastructure spending** ($20B/yr)

Manufacturers

- **Prioritize R&D investments** in emerging technologies
- **Identify target markets** to inform marketing and sales

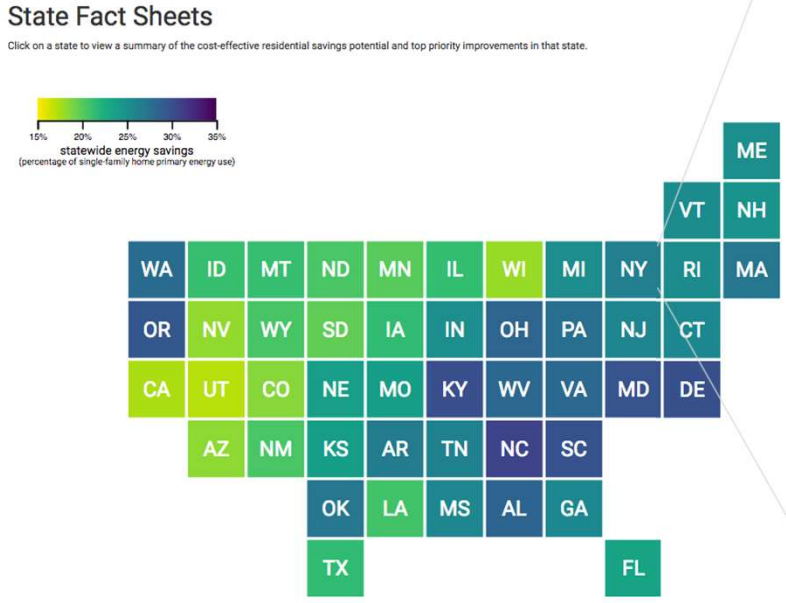
Cities/States

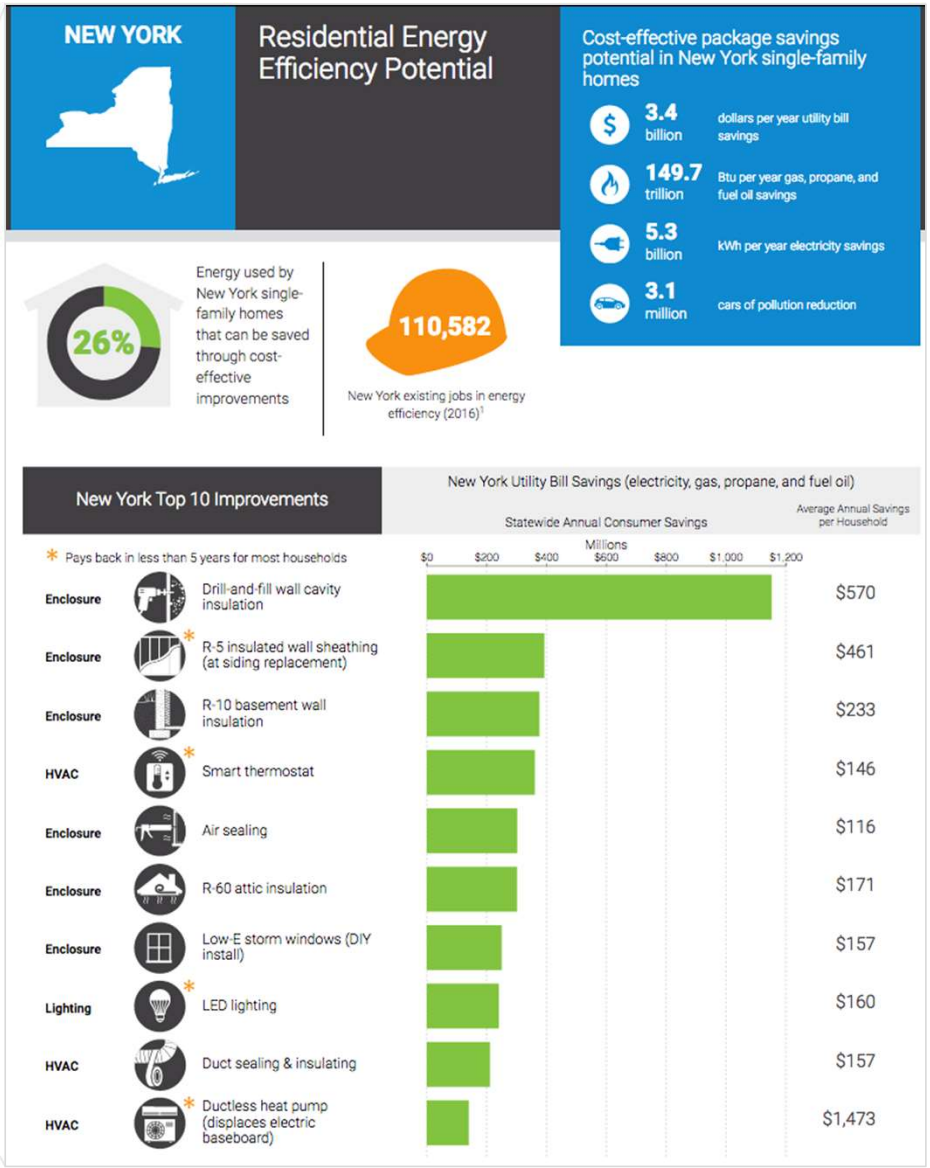
- **Identify the highest priority housing stock** improvements
- Understand how buildings contribute to **city/state energy or emissions targets**

$49 billion potential utility bill savings identified to date

48 State Factsheets

Available at resstock.nrel.gov





Mortgage appraisal energy cost estimates

Putting the “E” in PITI(E)

DOE is working with Fannie Mae, Freddie Mac, and the Appraisal Institute to explore the possibility of using ResStock to estimate energy costs for appraisals

Targeting savings opportunities for low- and moderate-income households

Find article link at:
resstock.nrel.gov/page/publications

Energy Policy 129 (2019) 710–737

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Evaluating energy efficiency potential in low-income households: A flexible and granular approach

Eric J.H. Wilson[a,*,1], Chioke B. Harris[a], Joseph J. Robertson[a], John Agan[b]

[a] Buildings and Thermal Sciences Center, National Renewable Energy Laboratory, Golden, CO, USA
[b] U.S. Department of Energy, Office of Policy, Washington, D.C., USA

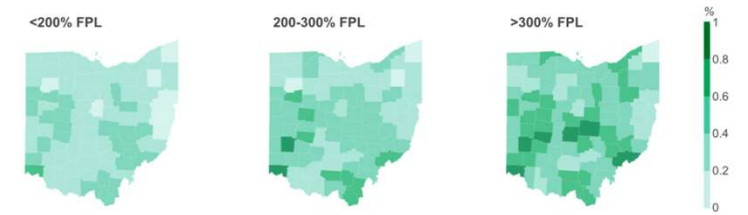


Fig. 5. Percentage energy cost savings resulting from upgrading central air conditioners to SEER 18 units at wear out (upgrades with positive net present value only), by county and income bin, in the U.S. state of Ohio.

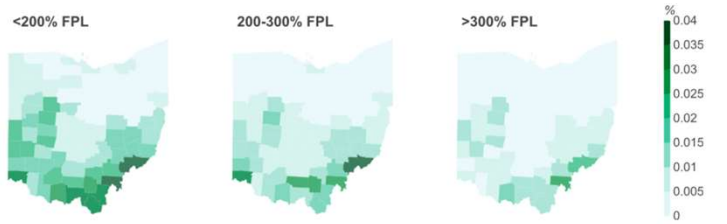


Fig. 6. Percentage energy cost savings resulting from upgrading room air conditioners to ENERGY STAR-qualified (SEER 12) units at wear out (upgrades with positive net present value only), by county and income bin, in the U.S. state of Ohio.

Los Angeles 100% Renewable Energy Study

Building load modeling

ResStock ComStock

First-of-its-kind analysis

What role do energy efficiency, electrification, and demand response play in achieving 100% renewable energy for a city AND utility?

Los Angeles 100% Renewable Energy Study

Building load modeling

ResStock ComStock

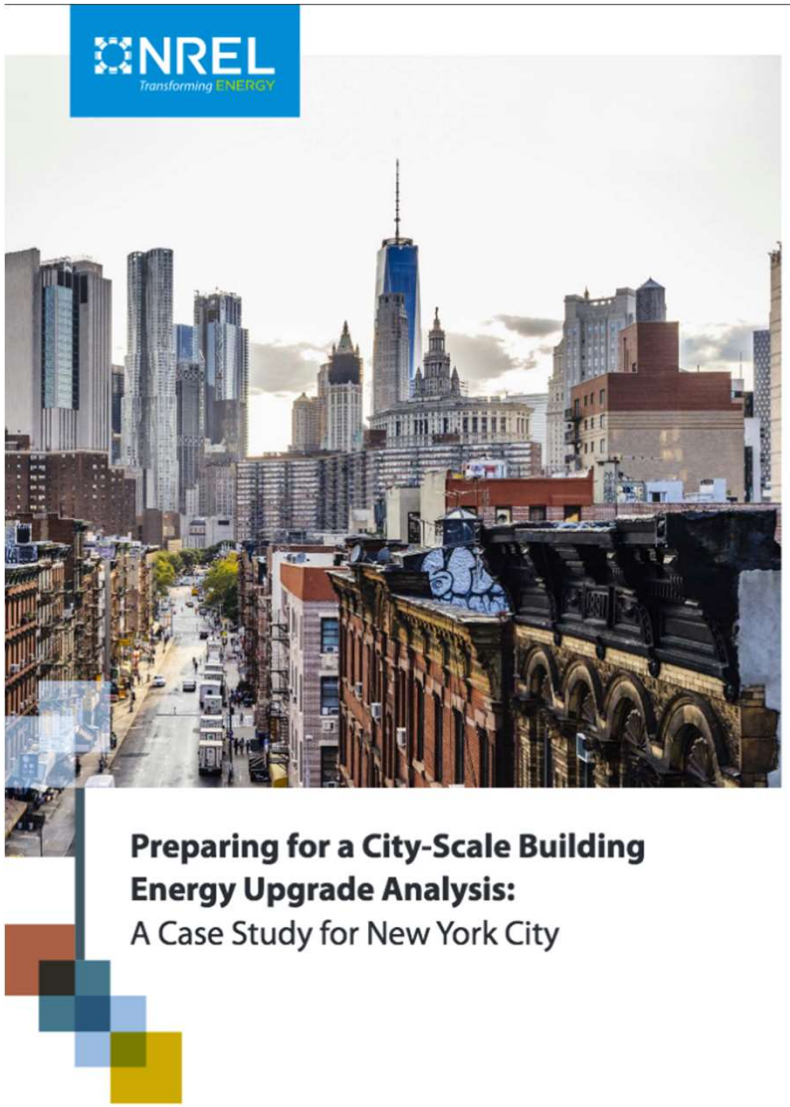
Electricity system modeling

First-of-its-kind analysis

What role do energy efficiency, electrification, and demand response play in achieving 100% renewable energy for a city AND utility?

Key study considerations

- Necessary infrastructure upgrades
- Critical transmission investments
- Maintaining system reliability
- Impact on equity, jobs, and local economy



Coming soon:

Case study on steps that cities can take to prepare for a detailed building stock analysis, using NYC as example

Thank you

www.nrel.gov
Eric.Wilson@nrel.gov

Deborah Philbrick

Elevate Energy

U.S. DEPARTMENT OF ENERGY

Residential Energy Labels across America

Deborah Philbrick
Senior Manager, Research & Innovation
July 11, 2019

ELEVATE ENERGY
Smarter energy use for all

Our Mission: Smarter Energy Use for All

We give people the resources they need to make informed energy choices.

Getting energy use right saves money, increases comfort, creates jobs, and protects the environment.

We ensure the benefits of clean and energy efficient energy use reach those who need them most.

What's a Home Energy Label?

Typically includes one or both of the following:

- A list of a home's physical assets, like insulation level or furnace efficiency
- An operational rating that compares the home's operating costs to a "typical" home, or uses the home's utility bills or modeling

Why a home energy label?

- It is a tool that can help homeowners make visible the typically invisible energy efficiency features of home, like insulation levels or operating costs.
- A well-designed label will create a straight-forward path for homeowners to follow, leading them to simple and effective home energy improvements
- Because homeowners now have a path for moving forward, it can drive them to utility program incentives and rebates.
- The label can also jurisdictions get a better, more granular, and more standardized view of its housing stock

Who did we talk to?

- City of Denver (Department of Public Health & Environment)
- State of Connecticut (Energize Connecticut)
- City of Austin (Austin Energy)
- State of Vermont (Efficiency Vermont)
- City of Berkeley (Office of Energy & Sustainable Development)
- City of Minneapolis (Center for Energy and Environment)
- City of Portland (Bureau of Planning and Sustainability)
- City of Holland (Community and Neighborhood Services)

But what does this really look like?

Home Inspection Energy Report

Minneapolis
City of Lakes

This report's purpose is to lorem ipsum dolor sit amet, consectetur adipiscing elit. Cras quis neque pharetra, rhoncus lectus sit amet, placerat metus. Suspendisse potenti. Curabitur lacinia est in tortor bibendum auctor.

LOCATION
1234 Sample Boulevard
Minneapolis, MN 55409

Improve your score by lorem ipsum dolor sit amet, consectetur adipiscing elit. Cras quis neque pharetra, rhoncus lectus sit amet, metus.

Energy Score

71

ENERGY AUDIT SUMMARY

	Action Recommended?	Potential Annual Savings*:
A. Windows and Shading	Yes	$100
B. Attic Insulation	Yes	$100
C. Air Infiltration and Duct Sealing	Yes	$120
D. Heating and Cooling System Efficiency (HVAC)	Yes	$270
	Total Annual Savings:	$590

HOME IMPROVEMENT RECOMMENDATIONS:

Austin Energy recommends the following actions based on the energy audit performed by Greenmon G. Greenburg of Gone Green Audits, Inc.

A. Adding shade to south-, east-, and west-facing windows reduces the heat that the Texas sun adds to your house.

B. Adding insulation to your attic can save you money. Look into insulating and sealing attic stairs and hatches, wall chases and openings between floors. This will prevent your house from heating up rapidly during summer and cooling down quickly during winter.

C. Weatherstrip your doors and seal places where pipes enter your home to prevent outdoor air leaking into your home, making it hot and humid during the summer and cold and drafty during the winter.

Sealing or replacing the air conditioning ductwork can reduce your electric bill and make your home more comfortable. The duct system must be properly sized and in good condition or the heating and cooling system will run longer and cool less efficiently.

D. Consider replacing your HVAC system with an energy-efficient model. Show the audit results to an HVAC professional, who will ensure that your heating and cooling system is right-sized and operating efficiently.

We appreciate your support of the ECAD ordinance and your efforts to make Austin the most livable city in the country.

Beneficiaries

- Local government
- Utilities
- Real estate agents
- People selling their home
- People buying new homes

The Temporal Aspect

- When do people interact with the label?

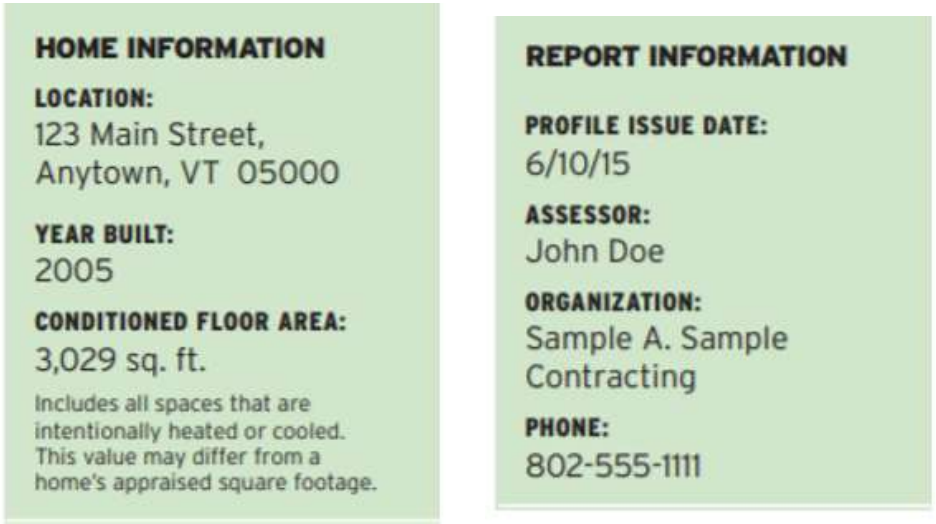
Best Practices from Around the Country

Main Sections of a Label

- Basic home and assessor information
- The score itself
- Energy features and recommended upgrades
- Taking action and next steps

Home and Assesor Information Section

- Clearly presented information about the home and the assessor



HOME INFORMATION

LOCATION:
123 Main Street,
Anytown, VT 05000

YEAR BUILT:
2005

CONDITIONED FLOOR AREA:
3,029 sq. ft.

Includes all spaces that are intentionally heated or cooled. This value may differ from a home's appraised square footage.

REPORT INFORMATION

PROFILE ISSUE DATE:
6/10/15

ASSESSOR:
John Doe

ORGANIZATION:
Sample A. Sample Contracting

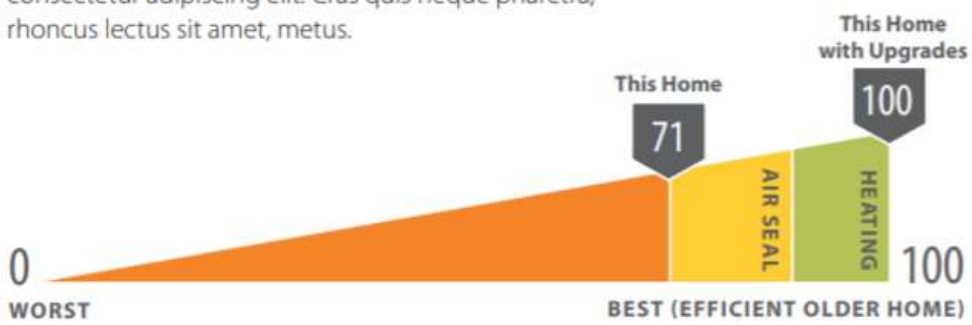
PHONE:
802-555-1111

Score Section

- There are many models for scores. However, programs report that consumers strongly value the potential to improve their score and a path for doing so

Score Section: Minneapolis

Improve your score by lorem ipsum dolor sit amet, consectetur adipiscing elit. Cras quis neque pharetra, rhoncus lectus sit amet, metus.



Score Section: Eugene, OR

Features/Recommendations Section: Minneapolis

COMPLETED AT THIS HOME

☑ **Wall Insulation:** Walls are the largest area of your home protecting you from the hot and cold of the outdoors. Once completed your house will be less drafty and you will be more comfortable in your home.

☑ **Windows:** Installing a storm window on the exterior of single-pane windows can cost-effectively reduce your energy usage. Although it is generally not justified by energy savings alone, replacing single-paned windows with double-paned, high efficiency, ENERGY STAR rated windows is another option.

RECOMMENDED UPGRADES

❑ **Attic Insulation and Air-Sealing:** Air leaks in your ceiling allow air from inside your house to enter the attic, causing ice dams and moisture issues. Sealing these leaks improves durability and saves energy. After air sealing is complete, insulation can be added to help keep your home warm in the winter and cool in the summer.

Typical Cost:
$1,750 – $2,250
Rebate Available:
$500

❑ **Heating System:** Replacing your old heating system with a new energy-efficient model will maximize your energy savings. We recommend a minimum 95% efficient (AFUE) furnace equipped with an ECM motor.

Typical Cost:
$3,000 – $6,000
Rebate Available:
$400

Features/Recommendations Section: Portland

*PRIORITY ENERGY IMPROVEMENTS | 10 YEAR PAYBACK OR LESS [1]

FEATURE	TODAY'S CONDITION[4]	RECOMMENDED IMPROVEMENTS
Duct insulation	Un-insulated	Insulate to R-8
Envelope/Air Sealing	Not professionally air sealed	Professionally air seal
Heating Equipment	Oil furnace 60% AFUE	When replacing, upgrade to ENERGY STAR [3]
Heating Equipment	Natural Gas/Propane Furnace	When replacing, upgrade to ENERGY STAR
Water Heater	Standard electric tank	When replacing, upgrade to ENERGY STAR, minimum 2.76 EF (Energy Factor)

Score **today:**	Score **with** priority **improvements:***	Estimated **energy savings** with priority improvements:	Estimated **carbon reduction** with **priority** improvements:
9	10	$267 PER YEAR	15% PER YEAR

Features/Recommendations Section

Includes:

- Energy efficiency feature
- Condition today
- Recommended upgrade (if any)
- Potential annual savings if upgrades
- Potential costs of the upgrade
- Incentives and rebates should be tied to recommendations

Features/Recommendations Section: Austin

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We appreciate your support of the ECAD ordinance and your efforts to make Austin the most livable city in the country.

Take Action/Next Steps Section

- Consumers report that they value simple steps for moving forward.
  - Links to participating incentive and rebate information
  - Links to contractors
  - A third-party to contact with questions

Take Action/Next Steps Section: Eugene, OR

TACKLE ENERGY WASTE TODAY!

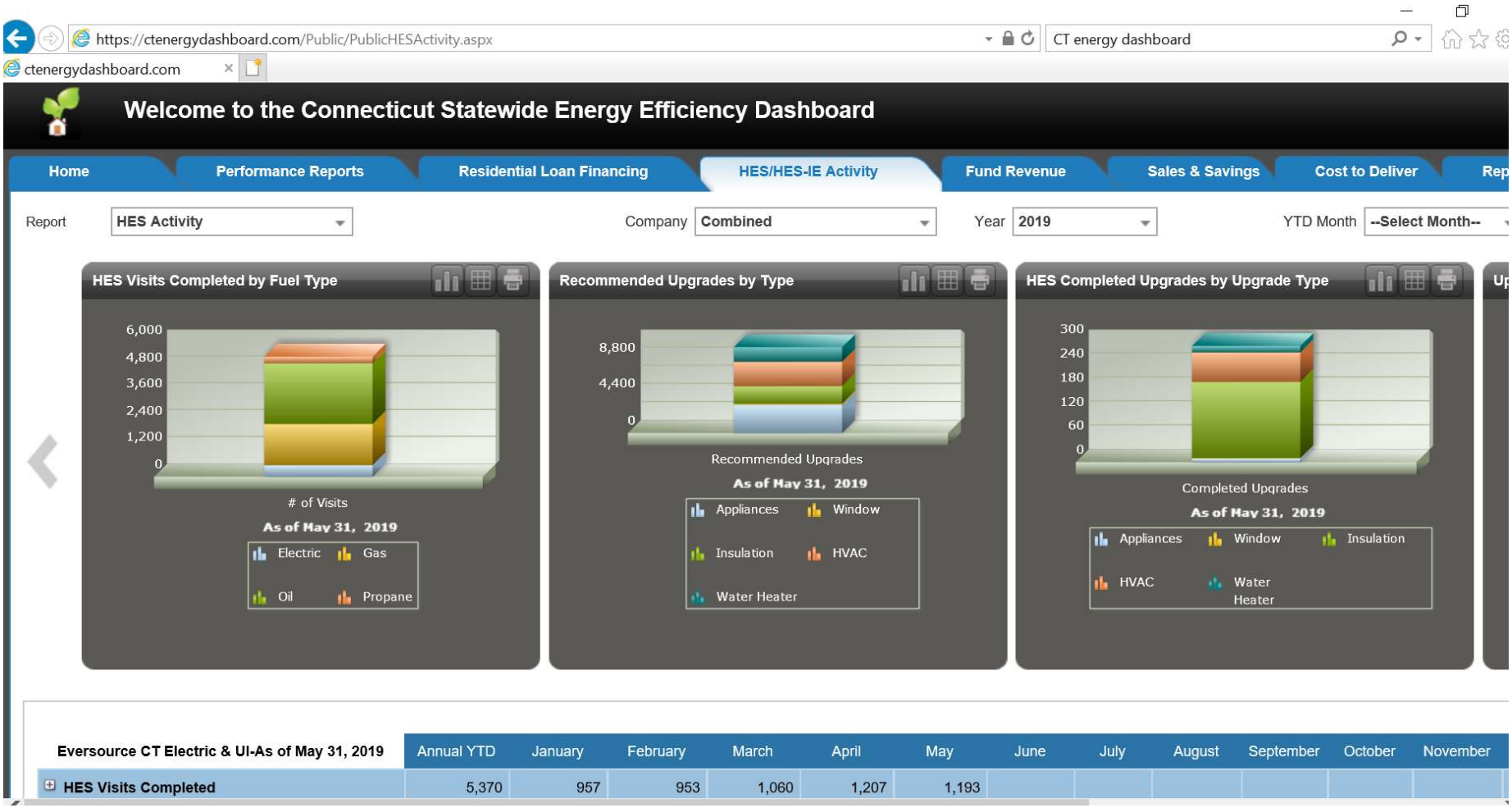
Enjoy the rewards of a comfortable, energy efficient home that saves you money.

- ☑ Get your home energy assessment (Done!)
- ☐ Choose which energy upgrades to address first.
- ☐ Get a bid. Find an EWEB-participating contractor by visiting our list online at **bit.ly/EWEBcontractor**.
- ☐ Complete energy improvements. For eligible measures, EWEB may be able to offer a rebate or a 0% interest loan. For more details, visit **eweb.org/saveenergy** or call EWEB at **541-685-7088**.

Interview Learnings

- Voluntary will only get you so far if your goal is market transformation
- Think about what ordinances or programs you already have
  - Minnesota & TISH
- You have to spend the money on marketing or outreach
- Reverse engineer from your goals
  - Climate Action Plan and GHG emission reduction?
  - Educated homebuyers?
  - Workforce development?

CT Energy Dashboard



Eversource CT Electric & UI-As of May 31, 2019	Annual YTD	January	February	March	April	May	June	July	August	September	October	November
HES Visits Completed	5,370	957	953	1,060	1,207	1,193						

Resources

- EMPRESS: Final Report, Released by NASEO

https://www.naseo.org/Data/Sites/1/documents/committees/buildings/resources/empress-project-final-report_v1[1].pdf

- Bringing Home Energy Information to Real Estate: A Toolkit

https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/HEIA%20TOOLKIT%20081318.pdf

- COMING SOON: Residential Energy Labels & Underserved Markets

Contact Information

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214.536.3880

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